

CLAIMS

What is claimed is:

1. A cartridge comprising:

- a) a body defining at least first and second channels
5 and a conical valve seat positioned between the
channels; and
- b) an elastic membrane for establishing a circular seal
with the valve seat to prevent the flow of fluid
between the channels.

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2. The cartridge of claim 1, further comprising:

- a) a valve actuator having a spherical surface for
pressing the membrane against the valve seat; and
- b) an elastic body for forcing the valve actuator to
15 press the membrane against the valve seat.

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3. A cartridge comprising:

- a) a body having formed therein:
 - i) a chamber;
 - 20 ii) a conical valve seat in fluid communication
with the chamber; and
 - iii) a channel extending from the valve seat; and
- b) an elastic membrane for establishing a circular seal
with the valve seat to prevent the flow of fluid
25 between the chamber and the channel.

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4. The cartridge of claim 3, further comprising:

- a) a valve actuator having a spherical surface for
pressing the membrane against the valve seat; and
- 30 b) an elastic body for forcing the valve actuator to
press the membrane against the valve seat.

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5. The cartridge of claim 3, wherein the valve seat is in fluid communication with the chamber via a port or channel intersecting the center of the valve seat.

5 6. A cartridge comprising:

a) a body defining:

i) at least first and second channels; and

10 ii) a cavity separating the channels, wherein an end of the first channel is positioned on a first side of the cavity, and wherein an end of the second channel is positioned on a second side of the cavity, and wherein the cavity is defined by:

15 a first curved surface positioned adjacent the end of the first channel;

a second curved surface positioned adjacent the end of the second channel; and

at least a third surface between the first and second curved surfaces; and

20 b) an elastic membrane for establishing a seal with the first and second curved surfaces to prevent the flow of fluid between the channels, wherein the third surface is recessed from the first and second surfaces to provide a gap between the membrane and
25 the third surface when the membrane is pressed against the first and second surfaces.

7. The cartridge of claim 6, wherein the first and second curved surfaces comprise first and second concentric
30 spherical surfaces.

8. The cartridge of claim 7, further comprising a valve actuator having a third spherical surface for pressing the membrane against the first and second spherical surfaces.

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9. The cartridge of claim 8, wherein each of the first and second spherical surfaces has a radius of curvature substantially equal to the sum of the radius of curvature of the third spherical surface plus the thickness of the membrane.

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10. The cartridge of claim 8, further comprising an elastic body for forcing the valve actuator to press the membrane against the first and second spherical surfaces.

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